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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/898,040	07/05/2001	Young Woo Yoon	K-280	2570
34610	7590	01/05/2005	EXAMINER	
FLESHNER & KIM, LLP			TORRES, JOSEPH D	
P.O. BOX 221200				
CHANTILLY, VA 20153			ART UNIT	PAPER NUMBER
2133				
DATE MAILED: 01/05/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/898,040	YOON ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Joseph D. Torres	2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 13 September 2004.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 43-47,49-56,58-60 and 64-97 is/are pending in the application.  
 4a) Of the above claim(s) 64-82 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 43-47,49-56,58-60 and 83-97 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 05 July 2001 is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
     1. Certified copies of the priority documents have been received.  
     2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
     3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____.                                   |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of Group IV (claims 43-47, 49-56 and 58-60) in the reply filed on 09/13/2004 is acknowledged. Since claims 83-97 depend respectively from independent claims 43 and 46, they will be examined along with claims 43-47, 49-56 and 58-60.

Newly submitted claims 64-82 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claim 64 is directed to rate adaptation where coding rate selection is based on interleaver size (classified in 714/774), whereas claims 43 and 56 are directed to puncturing or repeating bits for the purposes of rate matching to increase coding gain (classified in 714/822).

Since applicant has elected Group IV (43-47, 49-56, 58-60 and 83-97) in the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 64-82 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

### *Drawings*

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: none of the reference numbers used in the specification appear in the

drawings. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: e of the reference numbers used in the drawings appear in the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

3. The disclosure is objected to because of the following informalities: In line 10 of claim 1, the term "performing one of repetition and puncturing" has the following two interpretations: --performing one of repetition or puncturing-- or --performing repetition and puncturing--. Note: the Applicant only teaches --performing one of repetition or puncturing-- in steps 'S21', 'S31', 'S43' and 'S53' in the figures. Nowhere in the specification does the Applicant teach --performing repetition and puncturing--.

Appropriate correction is required.

### ***Claim Objections***

4. Claims 43-47, 49-55 and 83-85 are objected to because of the following informalities:

- In line 3 of claim 1, the Examiner is not sure what was intended by the term "providing information bit": --providing an information bit-- or --providing information bits--.
- In line 10 of claim 1, the Examiner is not sure what was intended by the term "performing one of repetition and puncturing": --performing one of repetition or puncturing-- or --performing repetition and puncturing--. Since the Applicant only teaches --performing one of repetition or puncturing-- in steps 'S21', 'S31', 'S43' and 'S53' in the

figures, the Examiner assumes --performing one of repetition or puncturing-- was intended.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 43-47, 49-55 and 83-85 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In line 10 of claim 1, the term "performing one of repetition and puncturing" has the following two interpretations: --performing one of repetition or puncturing-- or --performing repetition and puncturing--. Note: the Applicant only teaches --performing one of repetition or puncturing-- in steps 'S21', 'S31', 'S43' and 'S53' in the figures. Nowhere in the specification does the Applicant teach --performing repetition and puncturing--.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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6. Claims 43-47, 49-56, 58-60 and 83-97 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01.

Line 4 in claim 1 recites, "an encoder with a prescribed code rate" and line 6 recites, "adapting the prescribed code rate of the encoder". The omitted elements are: are elements relating "an encoder with a prescribed code rate" with "adapting the prescribed code rate of the encoder". In other words what does "adapting the prescribed code rate of the encoder" have to do with the encoder? Is the encoder an adaptive encoder with an initial prescribed code rate that is modified? Note: if an encoder is encoder with a proscribed code rate  $\frac{1}{4}$ , then it is a  $\frac{1}{4}$  rate encoder and adapting the  $\frac{1}{4}$  code rate to some other code rate has nothing to do with the  $\frac{1}{4}$  rate encoder.

Claim 44 recites, "the code rate of the encoder is adapted" and line 4 in claim 1 recites, "an encoder with a prescribed code rate". The code rate of "an encoder with a prescribed code rate" is the prescribed code rate and it is not clear what adapting the code rate of the encoder has to do with the encoder itself.

Claim 45 has similar problems as in claim 44, that is, it is not clear what the "adapted prescribed code rate" in claim 45 has to do with the encoder.

Claim 46 has similar problems as in claim 44, that is, it is not clear what adapting the "prescribed code rate" in claim 46 has to do with the encoder.

Line 4 in claim 56 recites, "an encoder" having "a prescribed code rate" and line 5 recites, "the prescribed code rate is adapted". The omitted elements are: are elements relating "an encoder" having "a prescribed code rate" with adapting the prescribed code

rate of the encoder. In other words what does adapting the prescribed code rate of the encoder have to do with the encoder? Is the encoder an adaptive encoder with an initial prescribed code rate that is modified? Note: if an encoder is encoder with a proscribed code rate  $\frac{1}{4}$ , then it is a  $\frac{1}{4}$  rate encoder and adapting the  $\frac{1}{4}$  code rate to some other code rate has nothing to do with the  $\frac{1}{4}$  rate encoder.

Claim 58 has similar problems as in claim 44, that is, it is not clear what the “adapted prescribed code rate” in claim 58 has to do with the encoder.

Claim 59 has similar problems as in claim 44, that is, it is not clear what adapting the “prescribed code rate” in claim 59 has to do with the encoder.

Claim 88 has similar problems as in claim 44, that is, it is not clear what the “adapted prescribed code rate” in claim 88 has to do with the encoder.

Claim 89 has similar problems as in claim 44, that is, it is not clear what adapting the “prescribed code rate” in claim 89 has to do with the encoder.

Claims 49-55 and 91-97 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

Claim 49 recites, “symbol puncturing is enabled for symbol groups”. The omitted structural cooperative relationships are: the relationship between symbols, symbol groups, information bits and frames.

Claim 91 recites, “coded bit puncturing is enabled for coded bit groups”.

The omitted structural cooperative relationships are: the relationship between coded bits, coded bit groups, information bits and frames.

Claims 88-97 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 88-97 recite the limitation "The method" in line 1. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 43-45, 84 and 85 are rejected under 35 U.S.C. 102(b) as being anticipated by Katsuragawa; Hiroshi et al. (US 5907586 A, hereafter referred to as Katsuragawa).

35 U.S.C. 102(b) rejection of claims 43-45.

Katsuragawa teaches providing information bits of a prescribed data rate to an encoder having a prescribed code rate (Tail bit Add Circuit 120 in Figure 5 of Katsuragawa

teaches providing information bits of a prescribed data rate to an encoder having a prescribed code rate); adapting the prescribed code rate of the encoder and providing coding bits (Convolutional Encoder 130 in Figure 5 of Katsuragawa teaches adapting the prescribed code rate of the encoder and providing coding bits), the prescribed code rate being adapted to increase coding gain (error correction encoding inherently increases coding gain since it allows for a reduction in the power necessary to transmit signals); and performing one of repetition or puncturing of the coding bits for rate matching (Repeat Circuit 140 in Figure 5 of Katsuragawa teaches performing one of repetition or puncturing of the coding bits for rate matching). Note: Interleaver 150 in Figure 5 of Katsuragawa is an interleaver for receiving an output of the rate matching device Repeat Circuit 140.

35 U.S.C. 102(b) rejection of claims 84 and 85.

Claims 84 and 85 provide functional statements of intended use and impart no structural to the method or the apparatus for which the method is intended. See, e.g., *In re Schreiber*, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997) and *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971).

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 46, 47, 49-56, 58-60, 83 and 86-97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katsuragawa; Hiroshi et al. (US 5907586 A, hereafter referred to as Katsuragawa) in view of Eroz; Mustafa et al. (US 6370669 B1, hereafter referred to as Eroz).

35 U.S.C. 103(a) rejection of claims 46, 47, 49-56, 58-60, 83 and 87-97.

Katsuragawa substantially teaches the claimed invention described in claims 43-45 (as rejected above).

However Katsuragawa does not explicitly teach the specific use of an adaptive convolutional or turbo encoder.

Eroz, in an analogous art, teaches use of an adaptive convolutional or turbo encoder (Note: Figure 3 in Eroz is an adaptive turbo encoder).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Katsuragawa with the teachings of Eroz by including use of an adaptive convolutional or turbo encoder. This modification would have been

obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of an adaptive convolutional or turbo encoder would have provided the opportunity for rate matching.

35 U.S.C. 103(a) rejection of claim 86.

Claim 86 provides a functional statement of intended use and imparts no structural to the apparatus of claim 56. See, e.g., *In re Schreiber*, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997) and *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971).

### ***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decay can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Joseph D. Torres, PhD  
Primary Examiner  
Art Unit 2133

